NWRS Region 1 FY 2014 Invasive Species Control Program Proposal

Refuge/complex name: Willapa NWRC

Project title: Willapa Bay *Spartina* Mapping and Eradication

Total amount of funding requested: $40,000.

Project description: The Willapa National Wildlife Refuge (Willapa NWR) proposes to continue a successful program aimed at eradication of the non-native cordgrass, *Spartina alterniflora* (*Spartina*) from Willapa Bay. As recently as 10 years ago, *Spartina* meadows and clone fields covered 8,500 acres of Willapa Bay's productive mudflats (Figure 1). Today 99% of the *Spartina* has been eliminated, but crews face a daunting job finding the remaining plants in the complex salt marshes surrounding the bay. During the 2013 season, a total of 0.314 acres was located and treated on the Refuge, with less than 0.9 acres found throughout the bay. Last year was the first time that the acreage treated on the Refuge increased since large-scale herbicide treatments began in 2003.

This proposal would continue to locate and treat *Spartina* infestations within the Willapa Bay Watershed and provide data to develop monitoring methods for verifying complete eradication. The project would focus early season efforts on locating and treating individual *Spartina* plants and clones. Follow-up inspection of previously treated areas, searching for, and treatment of, new plants would occur during the late season when tides and weather patterns are typically more favorable. Additionally, *Spartina* remains viable and green late into the growing season, while other vegetation turns brown, making it easier to detect. There are also lessons to learn from the *Spartina* eradication story in Willapa Bay. Documenting these lessons could save time and money and may be useful in avoiding mistakes where *Spartina* infestations are located elsewhere in the future.

Distinct project with well-defined objectives (10 points): An increase in the spread of *Spartina* over the several decades made it necessary to develop long-term plans to restore and maintain valuable and limited tideland habitats that are at risk of being altered by this invasive cordgrass. This project is remarkable in its scope, scale, and effectiveness as part of a unique watershed-level, multi-partnership *Spartina* eradication plan. The actions of this partnership have resulted in a dramatic reduction in the spread and colonization of *Spartina* in the bay. The success of these coordinated actions has put the goal of eradication within reach. Over a decade of research and adaptive management has resulted in a proven strategy for prioritizing and optimizing treatments using a biologically sound approach. The following partners would contribute to this project under MOUs with Willapa NWR:

- The Washington State Department of Agriculture (WSDA) would coordinate data analysis and reporting among all the partners.
- Washington State University would provide technical assistance in designing and testing survey and monitoring methods and provide statistical support.
- University of Washington Olympic Natural Resources Center (ONRC) would provide technical assistance and modeling to ensure completion of the eradication program.

Potential for maximum control/Likelihood of success (10 points): This proposal would continue proven IPM methods to treat *Spartina* infestations and collect data to develop monitoring methods that verify complete eradication. Currently 99% of the *Spartina* has been eliminated from Willapa Bay and the potential for complete eradication is favorable with continued treatment and monitoring. Two years of data have been collected to refine a model that estimates the time needed to reach eradication in all areas of Willapa Bay. Additional funds would be needed to continue these efforts in future years. If refuge control efforts in 2014 are not continued, or increased, the entire eradication effort (17 years of work by 9 agencies/organizations, at a cost of over $16 million dollars) could be at risk.

Comment [BF1]: Yes, but what is the USFWS' role? I get the sense that you are constantly alluding to trying to do something with the funding besides just search and destroy Spartina?

Comment [BF2]: Okay. But again… You're not really answering the question, are you?

Biological benefit to priority species or BIDEH (10 points): Willapa NWR was established to preserve important wintering and foraging habitats for migratory waterfowl in the Pacific Flyway. Preservation of waterfowl habitats, the conservation of endangered or threatened species, and the development, advancement, management, conservation, and protection of fish and wildlife resources, represent management priorities for achieving the refuge purpose. This project would help meet Goal 2 of the Willapa NWR Final Comprehensive Conservation Plan and Environmental Impact Statement (Willapa CCP) to protect, maintain, and restore estuarine habitats historically characteristic of the southwest Washington coastal region for the benefit of migratory birds such as Pacific brant, other waterfowl, shorebirds, wading birds, and seabirds, salmonids and other native fish such as green sturgeon and eulachon, and shellfish, and a diverse assemblage of other native estuarine-dependent wildlife and plant species. Halting the spread of *Spartina* will maintain natural benthic topology, protect native eelgrass (*Zostera marina*) beds from siltation, maintain healthy, unvegetated intertidal mudflats that serve as important foraging areas for migratory waterfowl and shorebirds, and protect subtidal habitats vital to native fish for feeding and rearing and for shellfish reproduction.

Sustainability (10 points): Specific knowledge regarding the distribution and extent of invasive *Spartina* occurring on the refuge is fundamental to a successful eradication program. All project activities are expected to continue beyond the project period, however, the current level of effort and costs are projected to decrease as fewer areas require treatment.

Monitoring to document and evaluate project success (10 points): *Spartina* eradication has been achieved in large blocks of Willapa Bay. As areas are cleared of *Spartina*, control efforts would be reallocated to the blocks that still contain *Spartina*, allowing more efficient use of crew time and resources. Past methods for identifying areas of infestation, such as using aerial inferred photography, do not provide the resolution necessary to detect the current fine-scale distribution of *Spartina*. Most of the remaining *Spartina* is located in remote areas of Willapa Bay, so methods of fine-scale detection are being developed and tested. One such method involves use of an amphibious machine that allows access to higher elevation, native grass meadows where *Spartina* is intermixed. The machine elevates surveyors above the ground allowing improved spotting and treating of small patches of *Spartina*. Access to lower areas along the shallow waters and complex shorelines would utilize airboats for searching and treatment.

A method of tracking the pace of progress toward eradication developed by Panetta and Lawes (2005) would be used for monitoring efficacy. The method divides elimination efforts into active and monitoring stages using bathymetrically influenced flow patterns in the bay. Once all plants have been eliminated in an area, it would be designated for monitoring. After repeated careful surveys show sufficient time with no regrowth, the area would be designated as eradicated. ONRC would apply this approach using GPS data collected by federal, state, and county crews to designate blocks of Willapa Bay. These data would track all areas throughout the bay as they transition from active to monitoring to eradication status through time. An annual report would be prepared by WSDA summarizing eradication efforts and incorporating GPS data to create maps of the spatial extent of *Spartina* plants.

Budget: The requested funding would staff a survey and treatment crew of four seasonal WG-05 employees. Permanent refuge staff would not have sufficient time to conduct the necessary surveys and implementation of IPM actions. A portion of the budget would also be allocated to fuel boat operations.

Category	**Total Projected Costs in $**	**% of Total Grant**
Equipment/Supplies	15,000	37%
Chemical	3,500	9%
Biocontrol Agents		
Travel		
Biotech/Contractor Salary	21,500	54%
Restoration Materials		
Other (Describe)		
TOTAL	40,000	

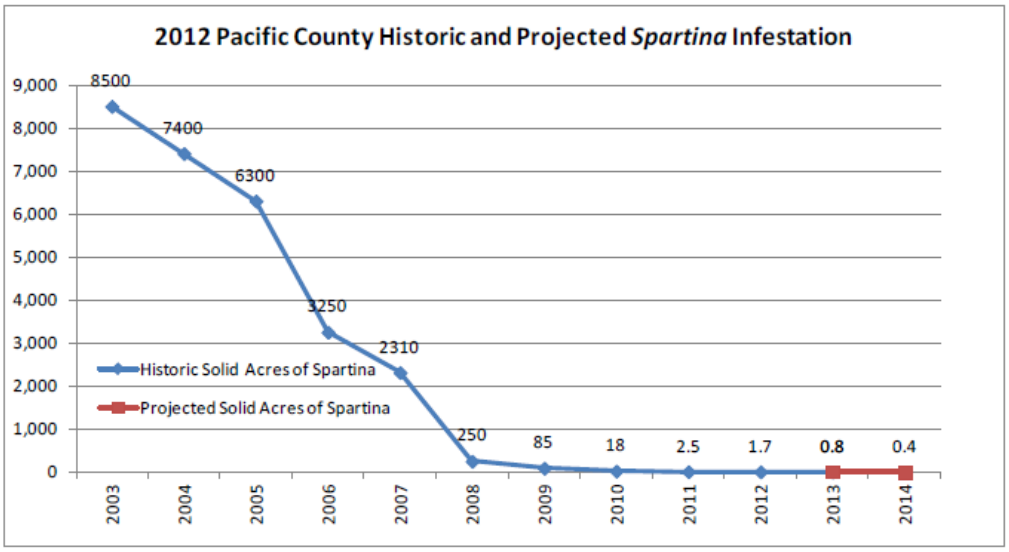

Figure 1. The amount of solid acres of *Spartina* in Willapa Bay by year based on WSDA estimates. The blue line represents the historic area of *Spartina* infestation since 2003. The red line represents the projected extent of *Spartina* through 2014, assuming continued funding.